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fronds of the two were alike. The fronds averaged 12 to 15 centimeters in length and one centimeter in width. The stipes were about six centimeters long, slender and channeled. The average width of frond was one centimeter. The pinnae were nearly semi-circular or broadly semi-elliptic in outline, 5-7 millimeters in width, 3-5 in length, coriaceous, dark green in color and bluntly and somewhat irregularly toothed; the shorter with a mid-vein which arose near the lower edge of the pinna, ascended nearly parallel to the rachis and gave off about four simple or forked veinlets on the outer side only; the more elongate pinnae with a more or less well-developed mid-vein with branches on both sides, as in typical plants of *P. vulgare*.

Since it is often desirable to have names for such peculiar forms, this one may be called *Polypodium vulgare*, forma **rotundatum** n. f.<sup>1</sup>

BENNINGTON, VT.

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### Salvinia in Minnesota.

F. K. BUTTERS.

For some years the various floras of the eastern United States have reported *Salvinia natans* (L.) All. as occurring in the vicinity of Minneapolis. These reports seem to be based on material distributed by the Herbarium of the University of Minnesota about thirty years ago. In 1916, after a careful investigation of the origin of this material, Professor Rosendahl and I published the following statement:

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<sup>1</sup> An analogous variation is found in the plant known as *Nephrolepis Duffii* Moore. This is a form of *N. cordifolia* in which the usually oblong pinnae are reduced to short, semi-circular affairs, exactly as in Mr. Ridlon's plant. Like it, too, *N. Duffii* is not a form developed under cultivation, but was first found in the wild.—c. A. W.

"The reports of the occurrence of this species in Minnesota are based on its spontaneous appearance at the University Greenhouse in a tub of water in which had been placed a quantity of aquatic plants, muck, etc., collected in Sweeney Twin Lakes in the vicinity of Minneapolis. From this origin it has flourished in the greenhouses of the University for more than thirty years. It has never been found growing in the open in Minnesota, though a careful search has been made in the Sweeney Twin Lakes and elsewhere. At the time when it appeared a number of aquatic plants from outside of the state were being handled in the greenhouse, and we are constrained to think that this plant was introduced along with some of them."<sup>1</sup>

Shortly after the appearance of this publication, Dr. H. L. Lyon of Honolulu, who formerly had worked extensively with the pteridophytic collections of this herbarium, suggested to me that apparently the plant in question is not *S. natans* at all. I had allowed the question to rest until last summer, when I received a letter from Mr. C. A. Weatherby, stating that an examination of the Minnesota material in the Gray Herbarium indicated that it is *S. auriculata* Aubl., and suggesting that I examine all available Minnesota material, and send a note to the Fern Journal embodying my conclusions.

An examination of both living plants and herbarium material has convinced me that it is all *S. auriculata* var. *Olfersiana* Klotzsch ex Baker. *S. auriculata* may be easily distinguished from *S. natans* by its nearly orbicular leaves, which are covered on the upper surface with clusters of trichomes raised on tall whitish papillae, which in the middle of the leaf are 2 mm. or more long, and by the numerous pinnate veins, which in

<sup>1</sup>C. O. Rosendahl and F. K. Butters, *Reputed Minnesota Plants which probably do not occur in the State*. Minnesota Botanical Studies, 4: 465. 1916.

dried material may be seen on the upper side of the leaf. In *S. natans* the leaves are elliptical, the trichomes borne on low papillae, and the veins imbedded in the tissues of the leaf and very obscure. The variety *Olfersiana* differs from typical *S. auriculata* in having smaller and much thinner leaves (in dried material,—they are rather thick and fleshy in the living plant) with only 15–30 lateral veins on each side, and in the much greater hairiness of all the submerged parts, including the sporocarps. It is possibly a distinct species, and is so treated by Britton in the Flora of Bermuda where there is an excellent figure which might easily have been drawn from the plant now growing at the University of Minnesota.

Both *S. auriculata* and the variety are natives of tropical America, and there is no evidence that either of them will survive a northern winter in the open. Thus it becomes even more improbable that the supposed Minnesota plant is really a native of this state, or has ever lived there outside of greenhouses, except possibly as a brief-lived escape during the summer.

UNIVERSITY OF MINNESOTA.

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OTHER RECORDS OF *SALVINIA NATANS* IN THE UNITED STATES.—Besides Minnesota, three other localities for *Salvinia natans* are given in current manuals. Some account of them may be of interest as a supplement to Professor Butters's note.

The earliest report of the species is in Pursh's Flora of North America, where it is said to have been found "floating like *Lemna* on the surface of stagnant waters in several of the small lakes in the western part of New York." No subsequent botanist has been able to find the plant in this region: we must conclude either that it did not become permanently established, or that it